Sexual Partner Type and Risk of Incident HIV-Infection among Adolescent Girls in HPTN 068

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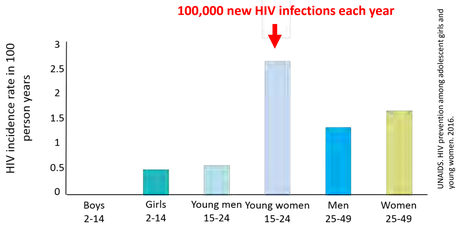
BACKGROUND

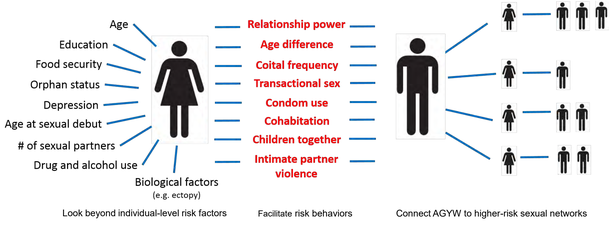
HIV AMONG ADOLESCENT GIRLS AND YOUNG WOMEN (AGYW) IN SUB-SAHARAN AFRICA

- AGYW ages 15-24 account for 74% of all new infections and AIDS is the leading cause of death among African adolescents
- In South Africa, HIV incidence is highest among young women ages 15-24



SEXUAL PARTNERS PLAY A CRITICAL ROLE IN HIV TRANSMISSION

- Connect AGYW to other higher risk sexual networks
- Directly expose AGYW to HIV (if infected)
- Facilitate risk behaviors that increase the risk of HIV acquisition for the young woman if the partner is infected



LIMITATIONS OF CURRENT APPROACHES

1) Partner risk factors are examined individually rather than together as they co-occur in the real world (single risk factor approach)
2) When examined together, other partner risk factors are held constant (multiple risk factor approach), or partner risk factors are treated as are exchangeable and additive (risk score approach)
3) Has NOT helped us identify or understand the **different types of sexual partners** among AGYW in rural South Africa
4) Has NOT identified differences across partner types that can be used to **identify partners that pose the greatest risk for HIV acquisition** and develop **more effective and targeted interventions**

METHODS

EFFECTS OF CASH TRANSFER FOR THE PREVENTION OF HIV IN YOUNG SOUTH AFRICAN WOMEN (HPTN 068)

- RCT of cash transfers for HIV prevention
  - Parent study enrolled 2533 AGYW living in rural Mpumalanga Province, South Africa
  - AGYW randomized to the intervention received monthly cash transfer (R300) for 80% school attendance
  - At enrollment: ages 13-20, grades 8-11, not married or pregnant, HIV-positive girls not excluded
- Secondary analysis
  - 1034 AGYW HIV-negative at baseline with ≥1 sexual partner

DATA COLLECTION

- Annual visit until complete study or high school
- Audio computer assisted self-interview (ACASI)
  - Demographics, partner characteristics, health and fertility, HIV knowledge, mental health
  - 3 sexual partners at each interview
- HIV screening with 2 rapid tests (Alere Determine HIV-1/2 test, Alere and, Uni-Gold™ Recombigen® HIV ½ test, Trinity Biotech)

IDENTIFIED SEXUAL PARTNER TYPES: 2 APPROACHES

- Pre-specified partner labels (self-reported)
  - Main partner/boyfriend
  - Regular casual sex partner
  - Non-regular casual sex partner
  - Sex work client
  - Other partner type
- Latent class analysis (identified using following partner indicators)
  - Partner age (partner ≥5 years; yes, no)
  - Partner enrolled in school (yes, no)
  - Children with AGYW (yes, no)
  - Children with other women (yes, no, don't know)
  - Cohabit with AGYW (yes, no)
  - Sex only one time (yes, no)
  - Always use condoms with partner (yes, no)
  - Partner has HIV (yes, no, don't know)
  - Partner has other concurrent sexual partners (yes, no, don't know)
  - Transactional sex with AGYW (yes, no)

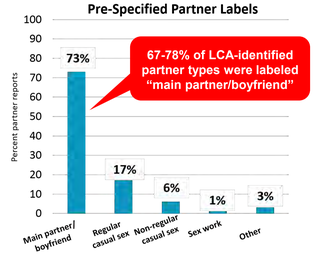
STATISTICAL ANALYSIS

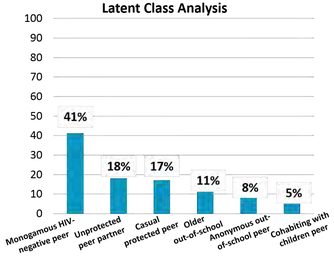
- Latent Class Analysis (LCA)
  - Number of classes: AIC, BIC, and G^2 model fit statistics; conditional probabilities; latent class prevalences; posterior probabilities
  - Interpret and label classes: literature, compared conditional probabilities to chance, assigned partners to class with highest posterior probability, compared distribution of partner characteristics within each class to overall distribution
- Risk ratios (RR) and 95% CI for association between sexual partner type and incident HIV infection
  - Exposure: Sexual partner type as measured by 1) pre-specified partner labels and 2) LCA
  - Outcome: Incident HIV infection
  - Confounders: Intervention, age, school enrollment, food insecurity, early sexual debut, intimate partner violence, relationship power, depression, alcohol use, drug use, number sexual partners in past 12 months, days since last follow up visit
  - Generalized estimating equations (GEE) robust variance estimator, exchangeable correlation matrix, binomial distribution, log link
    - Separate model for each sexual partner type (used common referent partner type)

RESULTS

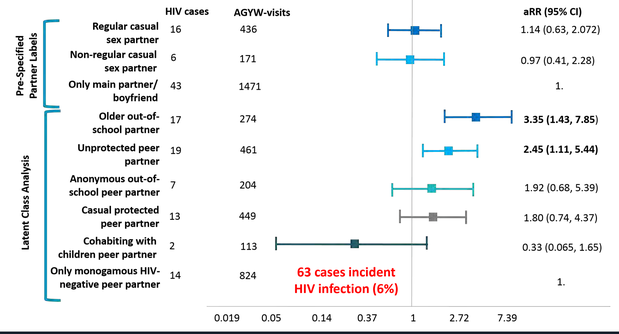
AGYW characteristics at first eligible visit: average 17 years old, 94% school enrolled, 29% food insecure, 7% double orphan, 35% depressed, 1.1 partners in past 12 months (0.06% with >3 partners)
Sample size: 1034 AGYW HIV-negative at baseline with ≥1 sexual partner → 2140 AGYW-visits (average 2 visits per AGYW) → 2968 sexual partner-reports (average 1.4 partner-reported per AGYW-visit)

SEXUAL PARTNER TYPE	DEFINING CHARACTERISTICS OF SEXUAL PARTNER TYPE
Monogamous HIV-negative peer partners ("monogamous") N=1226	• Less than 5 years older (89%; mean age difference 2.5 years) • No children with other women (92%) • No concurrent sexual partners (72%) • Inconsistent condom use with AGYW (87%) • Sex more than one time (92%) • HIV negative (96%)
Unprotected peer partners ("unprotected") N=527	• Less than 5 years older (96%; mean age difference 2.1 years) • HIV positive (15%), unknown HIV status (44%) • Have concurrent sexual partners (30%), unknown concurrency status (42%) • Inconsistent condom use with AGYW (93%)
Casual protected peer partners ("casual protected") N=508	• Less than 5 years older (95%; mean age difference 2.0 years) • Enrolled in school (76%) • HIV negative (80%) • Sex only one time (60%) • Always use a condom with AGYW (68%) • No transactional sex (92%)
Older out-of-school partner ("older") N=321	• 5 or more years older (97%; mean age difference 6.1 years) • Not enrolled in school (85%) • Children with AGYW (31%) • Children with other women (28%) • Have concurrent sexual partners (28%), unknown concurrency status (28%) • Inconsistent condom use with AGYW (82%)
Anonymous out-of-school peer partners ("anonymous") N=246	• Less than 5 years older (74%; mean age difference 3.5 years) • Not enrolled in school (73%) • Children with other women unknown (61%) • Unknown concurrency status (74%) • Unknown HIV status (57%) • Inconsistent condom use with AGYW (82%)
Cohabiting with children peer partners ("cohabiting") N=140	• Less than 5 years older (78%; mean age difference 3.1 years) • Enrolled in school (64%) • Live with AGYW (84%) • Children with AGYW (70%) • Children with other women (51%) • Have concurrent sexual partners (31%) • Inconsistent condom use with AGYW (97%) • Transactional sex (82%)





ASSOCIATION BETWEEN SEXUAL PARTNER TYPE AND INCIDENT HIV INFECTION



CONCLUSIONS

SEXUAL PARTNERSHIPS ARE COMPLEX AND DESERVE APPROACHES THAT CAPTURE AND ADDRESS COMPLEXITIES NOT MASK THEM

- Identified six, distinct sexual partner types, which differed by age, school enrollment, concurrency, condom use, transactional sex, perceived HIV-status, and other risk factors.
- Older partners are associated with incident HIV infection (>3x risk)
  - But peer-aged partners also risky (unprotected peer partner >2x risk)
- Context matters! Same risk behavior but different risk of infection
  - Condom use was low across all partner types
  - Transactional sex was common (highest among cohabiting partners 1/3x risk)
- Partner type (based on explicit, self-reported characteristics) predict incident HIV infection
  - Pre-specified partner labels hide nuances between partner types and did not differentiate partner types associated with incident HIV infection
- Information gained from this approach can be used to design more effective and tailored partner-focused interventions
  - Target specific combinations of factors that make partners high risk
  - Developed tailored interventions for AGYW most likely to select high risk partners

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